

The Physics of Genome Management

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There is a rich and interesting interplay between the informational and physical characteristics of genomes. Examples range from how DNA is packed in organisms from bacteriophage to humans to the biophysical factors dictating nucleosome accessibility to the nature of DNA looping as part of the transcriptional repertoire of a host of different cells. In this talk I will describe intriguing recent experiments that explore the physics of genome management, how simple models can be constructed to interpret such experiments (and used to make predictions for new experiments) and examples of both single-molecule and single-cell approaches to the study of gene regulation.